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FORMERLY

AMERICAN GAS LIGHT JOURNAL

VOL. CXI., No. 10
WHOLE No. 3209

NEW YORK, SATURDAY, SEPTEMBER 6, 1919

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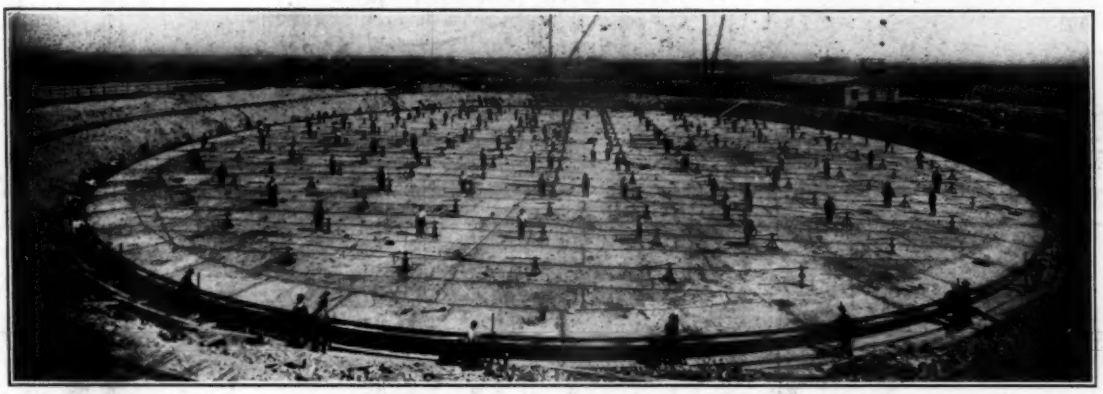

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The Gas Machinery Co.

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Entered as second-class matter January 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

American
Gas Engineering Journal

FORMERLY THE AMERICAN GAS LIGHT JOURNAL

Vol. CXI, No. 10 NEW YORK, SEPTEMBER 6, 1919 Whole No. 3209

Government Committee of Experts Finds, After Extended Study, That City Gas Has Big Place as Motor Fuel

British Experience Demonstrates Its Use in High Pressure Containers Is an Economy, and Is Not More Dangerous Than Other Fuels

In November, 1917, a British interdepartmental committee, of which the late Sir Boverton Redwood was chairman, and upon which were, among others, Dr. Charles Carpenter, W. Doig Gibb, F. W. Goodenough and Alderman Kay (now Lord Mayor of Manchester), was set up by Walter H. Long, Minister in charge of H.M. Petroleum Executive, to consider and report upon:

1. The employment of gas in substitution for petrol and petroleum products as a source of power, especially in motor vehicles, and the manner in which such gas may be supplied, stored, carried and used, with due regard to the safety of the public.

2. The action, if any, which should be taken by the Government to encourage and safeguard the use of gas for this purpose.

In an interim report made in April, 1918, the committee expressed itself as satisfied that ordinary town gas could be effectively, safely and promptly substituted for motor spirit, as a fuel for use in internal combustion engines of the types which are commonly fitted to motor vehicles, without reduction of the compression space in the cylinders of such engines. The committee also asked for authority to proceed with experiments and tests in connection with the determination of factors affecting portable gas generating plants and the commercial use of gas for traction purposes in containers at high pressures, together with questions relative to liquefaction, absorption and enrichment, as well as in regard to improvements in the existing arrangements for effecting the admixture of gas and air in the requisite proportions under varying conditions.

This authority was given and an expert sub-committee set up, which included, in addition to five members of the main committee, Prof. C. Vernon Boys, F.R.S., J. G. Clark, Prof. Bertram Hopkinson, F.R.S., George J. Shave, M.I.Mech.E., and Sidney Straker, Assoc.M. Inst.C.E. Professor Hopkinson was killed in August while flying, and Prof. W. E. Dalby, F.R.S., took his place on the expert committee.

The committee issued its final (and unanimous) report dated June 30, 1919, and gives the following conclusions and recommendations:

Conclusions

1. Gas traction is fully as safe as any other system of mechanical traction, even when exposed and unprotected flexible containers (gas bags) are used.

2. Gas traction in its newer forms of application merits adoption as a commercial alternative to electric, petrol or steam traction, more especially for the propulsion of motor omnibuses and other commercial types of road motor vehicles, including tramcars.

3. The average traction equivalent of 1 gal. of gasoline is 250 cu. ft. of ordinary town gas.

4. Flexible containers (gas bags) will be generally superseded by semi-rigid and rigid containers wherever compression plant can be installed; but it is inexpedient, having regard to the uncertainties which surround the future of liquid fuel supplies in relation to prospective world-wide demands, that any existing facilities for gas traction service should be either abandoned or dismantled.

5. In the event of an attempt to establish a monopoly of motor spirit, any consumer for traction purposes of not less than 80,000 gal. a year has the commercial alternative, where supplies of town gas cannot be obtained at a moderate price, of making his own gas.

6. Semi-rigid containers made of rubber and canvas are unsatisfactory, but semi-rigid containers made of an inner rubber bag suitably restrained by an outer member of woven steel wire with metal end-plates, and complying with approved specification, appear to be satisfactory for internal pressures not exceeding 45 atmospheres, although results of endurance tests in service are not yet available.

7. The time has come to approve and encourage the use of metal cylinders, made of high-carbon or certain alloy steels, to contain combustible gases at high pres-

sures for traction purposes, and such metals can now be safely so employed for working pressures up to 2,250 lb. on the square inch.

8. Subject to the adoption of the simple precautions specified, there is no risk of explosion with town gas during its compression into cylinders or its use from them.

9. Wire-wound metal cylinders with removable ends held in place by screwed tension rods lose gas at the joints after the earlier stages of discharge, and are heavier for any given volume of gas than plain cylinders made of high-carbon or alloy steels.

10. The cost of compressing town gas into cylinders, inclusive of maintenance of compressor plant, storage cylinders and vehicle cylinders, and of interest and depreciation on the capital sums required, will vary between 1s. 8d. and 3s. per 1,000 cu. ft. of free gas, according to quantity required and working pressure adopted, the total cost involved being on the average equivalent to 7d. per gallon on any petrol replaced.

11. Satisfactory pressure reduction systems are available to effect the requisite automatic control of gas at high pressures to meet road transport conditions for either passenger-carrying or goods-carrying vehicles.

12. The highest mechanical and thermal efficiences under road transport conditions of working can be attained by average drivers when there is a non-variable air admission area and the volume of air after initial setting is controlled solely by the travel and speed of the engine pistons, the only hand regulation during running being that of the gas admission (not air and gas).

13. The relative power yields that are obtainable from an ordinary motor vehicle engine, unaltered structurally as regard the compression space, may on the average be accepted as:

When working on petrol	100
When working on town gas of 450 B.t.u. (gross) per cubic foot	91
When working on suction producer gas (partly hydrogenated with water gas) of 210 B.t.u. (gross) per cubic foot	87
When working on suction producer gas of 140 B.t.u. (gross) per cubic foot	82

14. Portable suction gas producers are available of types adapted for the propulsion of commercial goods-carrying vehicles; such plants, after the necessary attention at lighting up, can be made to function automatically. Their fuel cost, with coke at 45s. per ton or anthracite at 55s. per ton, is equivalent to petrol at 5.4d. per gallon. One hundredweight of coke or anthracite will on the average do the same work on the road as 5.6 gal. of petrol, and the weight of generator and accessories for a 30-b.hp. engine is about 220 lb.

15. The risk of escape of unburned carbon monoxide gas from a suction gas plant in a motor vehicle is not such as to call for the exercise of special precautions except while the vehicle is at rest overnight within an enclosed structure with the fire still burning in the producer.

16. The water feed to a portable suction gas producer can be so adjusted as to increase the calorific value of the issuing gases by as much as 50 per cent on a consumption of water falling as low as 25 per cent by weight of the simultaneous consumption of anthracite or coke.

17. Importance has heretofore been attached by motor vehicle users to the relative calorific values of combustible gases, instead of to those of mixtures of such gases with the requisite volumes of air, in forecasting the respective power yields on their internal combustion.

18. Suction gas, employed alone or partly hydrogenated with water gas, should in the near future prove a suitable alternative fuel for use in any internal combustion engine primarily designed to run on alcohol.

19. Physical difficulties of storage and conveyance in conjunction with allied considerations of cost render the use of liquefied hydrogen, methane, carbon monoxide or ethylene, which gases are or may shortly become available for liquefaction on the large scale, commercially impracticable for traction work.

20. There is an increase of weight when an absorbent material is introduced, compared with that when cylinders containing only gas under compression are used, for any given volume of free gas, and no saving in the total cubic space occupied.

21. The necessary extra provision to utilize systems for enriching gas in any vehicle does not yield commensurate advantage, with possible but as yet unproved reservations in favor of the use of acetylene or naphthalene.

Recommendations

22. The national importance of ordinary town gas as a home produced and distributed fuel for power and traction purposes should now be brought within the official cognizance of all departments of government, both central and local.

23. There should be all possible departmental and local authority encouragement and provision for the extension of gas power and gas traction facilities.

24. No restrictions or regulations other than those that may be necessary to insure compliance with the terms of the report should be placed upon the drawing of gas for traction purposes through suitable meters at consumers' premises or private filling stations, subject to the sufficiency of local supplies of gas.

25. Rotary meters should be tested with a "flying" start, and their use approved if they are accurate within 2½ per cent plus or minus while capable of passing gas.

26. Sections 12 and 13 of the Sale of Gas Act, 1859, should be so amended as to give certain new powers to the Board of Trade with reference to gas meters.

27. No regulations that are not equally applicable to petrol-driven vehicles should, as regard access to public wharves and warehouses, or the estates and premises of dock and harbor authorities, be applied to gas-propelled vehicles which are equipped to run on compressed gas.

28. The circulation of motor traffic by means of power derived from self-contained, portable suction gas plants should be approved by the Fire Offices Committee.

29. The use of semi-rigid containers made of an inner bag of rubber and an outer casing of woven steel wire with end-plates of solid metal, if constructed and tested to our specification, should be permitted for working pressures up to 45 atmospheres.

30. Any cylinder or cylinders to contain gas under compression should, when fitted in a vehicle for traction work, be disposed within and be totally enclosed

by the bodywork or other substantial material of the vehicle structure.

31. Any cylinder or cylinders fitted in any vehicle to contain gas under compression for traction work should by preference be recharged while in position in the vehicle.

32. No individual firm, company or other undertaker should be allowed to compress gas for traction purposes, or to supply or charge cylinders for such purposes, except after notification to and registration by the Ministry of Ways and Communications.

33. The use of cylinders of carbor or certain alloy steels, made to comply with our specification, should be permitted in traction work for internal pressure up to 2,250 lb. on the square inch, and our specification should now in respect of such purposes replace that of the Home Office Committee of 1895.

34. The safety valve on the charging side of any compressor, on its use for the delivery of gas to cylinders for traction purposes, should be set for not more than 5 per cent excess of the actual working pressure approved for the particular service, and under no circumstances for a pressure higher than seven tenths of the test pressure marked on the cylinder.

35. There should be provision at any compressing installation to ensure that air is not drawn into the compressor with the gas, and other precautionary measures should be based upon the committee's model set of regulations.

36. Piping, joints, reducing valves, gauges and other control fittings and accessory parts should comply with the general recommendations in our report, but we consider it to be unnecessary to lay down hard-and-fast rules on points of detail other than a standard connection, which should be cut to ⅝ in. British standard pipe thread.

37. A vehicle deriving its power from a portable, self-contained suction gas producer should not be housed under living-rooms in human occupation, or while the fire is alight be stored overnight in the same building or enclosed structure as a petrol-driven vehicle.

The committee states that while in January, 1918, there were fully 5,000 motor vehicles in use with gas equipment, the progressive restrictions of the application of gas to this use that became necessary reduced the number to 3,600 by the following January.

Economic Testimony from Actual Experience

The committee gives three extracts from the evidence submitted which show that satisfactory economies are realizable when ordinary town gas is substituted for petrol.

From the evidence of W. J. Thomson, general manager of the Scottish Motor Traction Company, Ltd., Edinburgh:

"Had it not been for the gas we could not have given anything like the public service which we have been giving during the past year. Quite apart from that, however, it has paid us to use gas instead of petrol, and in support of this contention I give the following figures: We have averaged 251.4 cu. ft. per gallon of petrol replaced, mostly on debenzolized Edinburgh gas. Assuming that all mileage had been done on petrol at our usual consumption of five miles per gallon, we should have used 237,897 gal. of petrol, and the cost of this to us for the past year was 2s. 4½d. per gallon. This is equivalent to a total cost of £28,002 9s. 2d. Actually, our total expenditure on petrol was £10,674 13s. 10d., and the total cost of the gas used (including cost of bags, attendants' wages, etc.) was £10,843 3s. 6d., making our total fuel bill for the year £21,517 17s. 4d., thus showing an apparent saving of £6,484 11s. 10d. From this, however, must be deducted the loss of time in filling and the loss of profit which might be made during the time for filling. The time lost in filling in our case is forty hours per day for the whole fleet of forty motor buses, which is approximately £5 per day, equal to £1,825 per annum. Taking the profit lost at 3d. per mile, eight miles per hour on a total of forty hours per day make it approximately £4 per day, equal to £1,460 per annum. These two latter items together make £3,285, and taking that from the apparent saving of £6,484 we still have an economy of £3,199 for the year. Even taking gas at 4s. per 1,000 cu. ft., whereas my average cost over a year was 3s. 8¼d., my year's fuel bill for gas would come out at £11,895. If £2,500 were added for gas bags and replacements, this only comes to approximately £14,400, whereas had I been using petrol entirely it would have cost £28,000 in respect of my company's forty motor omnibuses, a saving of nearly 50 per cent."

From a memorandum submitted by H. O. White, engineer to the Great Grimsby Street Tramways Company, Ltd., Cleethorpes:

"We estimate that for every 1,000 miles run on gas we save £15 as compared to petrol, after meeting all charges. The number of cubic feet we have found to equal 1 gal. of petrol is 240; a large part of our gas supply had not been debenzolized. This figure represents a full year's working, and includes both short and long distance running. The relative cost between gas and petrol we have found to be 8d., as against 2s. 7½d. These figures are based on the cost of gas at 2s. 8d. per 1,000 cu. ft., and the cost of petrol at 2s. 7½d. per gallon. In arriving at the saving mentioned between gas and petrol, 1d. per mile (or £4 3s. 4d. per 1,000 miles) is included in cost of the gas for depreciation of the container."

From a report by G. J. Shave, M.I.Mech.E., on the experimental running of omnibuses belonging to the London General Omnibus Company, Ltd., with compressed gas equipment, on the Cricklewood-Victoria route:

"The total cost of compressing 1,000 cu. ft. of gas to 1,000 lb. on the square inch is approximately 2s. 3d. for our present small plant (ten-vehicle capacity) used intermittently. Taking gas at 4s. 4d. per 1,000 cu. ft., this makes a total fuel cost of 6s. 7d. per 1,000 cu. ft., which as against petrol at 2s. 4d. per gallon shows a comparison (on our proved basis of 250 cu. ft. to 1 gal. of petrol) of 19.75d. for gas to 28d. for petrol, a saving of 29.5 per cent. It will be seen that while the cost of petrol is given at the price ruling for large contracts, that of gas is at the ordinary consumers' rate; therefore, were the comparison made on the ordinary retail price of petrol the ratio of percentage would be more distinct, and any reduction in the price of gas or of electric current used as a source

(*Continued on page* 209.)

Use of Gas in the Manufacture of Drinks of the Beer Type

Various of the Non-Alcoholic Type Will Probably Come Into Increasing Popularity — Field a Simple One to Become Enlightened on and Easy to Develop

By GILBERT C. SHADWELL

In a recent article the writer dealt with the subject of the use of gas in the manufacture of syrups for soft drinks and other purposes. These syrups when mixed with aerated waters naturally yield the finished drink. On the other hand, there are a number of soft drinks of the beer or brewed type made without the intermediate aid of a syrup, and these are usually boiled with water in a copper kettle. A gas-fired cauldron furnace or galvanized tank furnace is a splendid appliance for this class of work, and the writer has found that the greatest satisfaction results from their use. The tank furnace is in particular demand, especially in capacities of 80 and 100 gal. This is just about right for the small man, and it has the additional advantage that as his business grows he can set others alongside, because all capacities are made the same over-all height and same distance front to back. The front length is the only measurement which changes with the capacity. The boiling chamber has a suitable drum, which should be countersunk to run off all the liquid, and an anti-drip lid should be added; the boiling chamber should be of heavy gauge steel (not cast iron), welded and then dip galvanized. No. 10 gauge steel is about right, and such an appliance ought to last for many years. Where extra large capacity is needed, the design has necessarily to be slightly modified.

Root Beer and Ginger Beer

Root beer and ginger beer are fairly common soft drinks, and although they form a minute proportion of alcohol yet the writer believes they are of the non-intoxicating order. Nevertheless, no responsibility is assumed that the recipes given below will always conform to any specified alcoholic strength. That feature is strictly up to the soft-drink manufacturer.

The following, then, will be a guide to the gas man as to what these different drinks consist of, and will familiarize him with what is to be accomplished and thus make his work in supplying the necessary apparatus easier.

It must not always be assumed that no existing furnace can be converted over to gas. Far be it from the writer to assume any such thing. Just this, however: It is better to supply the complete equipment; but if this cannot be done, then suitable rules for conversion can be followed.

Considering root beer, then, first of all as being one of the commonest manufactured, it is usual to pour pure water into the kettle of the cauldron furnace or the boiling chamber of the tank furnace until a few inches from the top are reached. The burner is then lighted and the water made to boil. When boiling, 1½ lb. of molasses are added to each 5 gal. of the water. This is then allowed to stand for three hours (the burner being first of all turned out just as soon as the molasses is all dissolved). After this (for each 5 gal.) there is added bruised sassafras bark, wintergreen bark and sarsaparilla root, ¼ lb. of each, as well as ½ pt. of fresh yeast. It is then run off into a larger vat and water added to the extent of twice what is already present. For instance, if 5 gal. have been made water is added to make about 15 gal. all told. After the liquid has fermented for about twelve hours, it can be bottled and will be ready for use.

An alternative is as follows: Boil a suitable quantity of water in the cauldron or tank furnace. To this add 2½ oz. of sassafras, 1½ oz. of wild cherry bark, 2½ oz. of allspice, 2½ oz. of wintergreen bark, ½ oz. hops, ½ oz. coriander seed and 2 gal. of molasses. Let the mixture stand twenty-four hours. Then add 1 pt. of yeast after straining, and add enough water to make 15 gal. This beer may be bottled the following day.

It will be noted that the fermentation is usually sufficient to gasify the beer naturally. It will also be seen that it is desirable to have a spare vat or kettle, which may or may not be equipped with burners. It is usually best to duplicate such equipment, or even to triplicate or quadriplicate it, so that while one unit is fermenting or standing another may be in process of being bottled, etc.

There are quite a few drinks put up with fancy names, but they are all merely modifications of this type of drink. Moreover, as it appears that an alcoholic percentage of one-half of 1 per cent to 4 per cent, or even more, is allowable according to the location, there is likely to be quite a sale for beers of this type. Also, it will be quite evident that the alcoholic content can be made exceedingly flexible.

Possibilities of Ginger Beer

The following are common methods of manufacturing ginger beer. While this drink has not been so popular in this country as has been the case in England, yet there is every possibility of it being made in the future. The same type of gas-fired cauldron or tank furnace can quite readily be employed as before. The first method is in the following proportions: Jamaica ginger, 2½ oz.; moist sugar, 3 lb.; cream of tartar, 1 oz.; juice and peel of two lemons; ale yeast, ¼ pt.; water, 3½ gal. This will produce four and one-half dozen bottles of ginger beer, and, naturally, if the output is to be larger the quantities can all be increased in exactly the same proportion. This beer will keep twelve months quite well without preservation. The method is to boil the ginger and sugar twenty minutes in the water. The sliced lemon and cream of tartar are then added or, better yet, are put in the spare vat already referred to above. The cauldron furnace, which should have an outlet, has its contents then run into the spare vat over the cream of tartar and lemon peels. The whole is then

stirred; after it has reached a temperature of about 70 deg. Fahr. the yeast is added. It is then covered and left two or three days, being skimmed fairly frequently. After this it is strained and run into a barrel. At the end of two weeks it is bottled and closely corked.

An alternative is: Brown sugar, 2 lb.; water, 2 gal.; cream of tartar, 1 oz.; bruised ginger root, 2 oz. The ginger is infused in the water, which is made to boil. Then the sugar and cream of tartar are added. When lukewarm it is strained and ½ pt. of good yeast is added. It is then allowed to stand all night and then bottled in the morning. Some manufacturers add egg white and lemon to fine it.

Hop beer is a soft drink which is likely to receive quite some attention in the near future. The proportions are: Water, 5 qt.; hops, 6 oz. Boil three hours; strain the liquor; add water, 5 qt.; bruised ginger, 4 oz., and boil a little ginger; strain and add 4 lb. sugar, and when lukewarm add 1 pt. of yeast. Let it ferment. In twenty-four hours it is ready for bottling.

Lemon beer is another which is likely to be made more extensively. The proportions are: Boiling water, 1 gal.; one sliced lemon, 1 oz. bruised ginger, ½ pt. of yeast, 1 lb. of sugar. This has to stand twelve to twenty hours. It is then ready to be bottled.

The industrial fuel man should not forget that these are all old, well-established formulas and, even if not made extensively just now, are likely to receive attention as soon as regular beer passes off the map, as appears to be likely before long.

The two following may probably be made into non-alcoholic beers if sufficient water be added; but, due to the fact that they are taken from a book of regular beer formulas, they must not be made of the strength indicated but must be diluted with several times their volume of water. It seems possible, however, that as they form most excellent beers this course will be adopted. In appearance and taste as formulated they make a very fine grade of liquor akin to English ale. The scale has been made for one barrel undiluted for the sake of convenience in estimating the requisite amount of dilution necessary to make it into a soft drink: One peck of good malt, ground; 1 lb. of hops; put in cauldron furnace (with copper or galvanized kettle) and pour in 20 gal. of water. Turn on gas and boil for thirty minutes; then turn on the outlet and turn out the gas. Run contents through hair-cloth bag or sieve so as to keep back the hops and malt from the sort. When cooled down to 60 deg. Fahr. add to it 2 gal. of molasses with 1 pt. of yeast. Mix with wort and run into a clean barrel. Fill up with cold water to within 6 in. of bunghole (this space being required for fermentation). It should be bunged down tight. In two weeks the beer as made could be drawn, and it improves with age. What changes are necessary so far as aging, etc., is concerned, when diluted, the writer cannot say, but that some such proposition will be adopted so as to make a near-beer is more than likely before long, and doubtless gas men will be glad of this information, which ought to prove beneficial in judging the size of the appliances necessary. Existing breweries may possibly adopt a course similar to this. Molasses beer is somewhat similar. The proportions (without dilution) are: 14 lb. of molasses, 1½ lb. of hops, 36 gal. of water. After cooling, the molasses and yeast are added and stirred, and the fermentation, etc., is the same as before.

What is known as Ottawa beer consists of sassafras, allspice, yellow dock and wintergreen, 1 oz. each; wild cherry bark and coriander, ½ oz.; hops, ¼ oz.; molasses, 3 qt. Boiling water is poured on and it stands for twenty-four hours. After this the whole is filtered and ½ pt. of yeast added. It is then left for twenty-four hours and bottled. It is usually served iced and is likely to be in demand.

It would, of course, be impossible in the space of this article to add others, but as the industry develops it is hoped to say a few words more in a later article on this and allied questions.

That the data now presented are incomplete is admittedly true; but there is no doubt but that this short outline should be of material benefit in giving industrial men an insight into the field that lies open to them.

With regard to the conversion of an existing cauldron furnace to gas the computations required to determine the size of burner are not at all difficult. We will assume that the size of grate, fire and ash pit doors, etc., is such that a standard atmosphere burner can be readily inserted.

We will tabulate the data as follows:

Type of kettle—"Round" cast iron.
Nominal capacity of kettle—220 gal.
Actual capacity of kettle—200 gal.
Liquid actually heated to 6 in. of top or thereabouts—150 gal.
Nature of liquid—Assume same as water.
Approximate specific heat of liquid—1.
Temperature required about—200 deg. Fahr.
Atmospheric temperature—70 deg. Fahr.
Time to be taken in heating—One and one-half to two hours.
Construction of furnace—Brick.
Fuel used previously—Coal.
Diameter of grate—30 in. (approximately).
Location and size of doors—Assumed to be satisfactory.
Size of fire door—Assumed to be satisfactory.
Size of ash-pit door—Assumed to be satisfactory.
Height from bottom of kettle to grate—Assumed to be satisfactory.
Height from top of grate to ash-pit floor—Assumed to be satisfactory.
Arrangement of flue—Assumed to be satisfactory.
Gas available—600 B.t.u. per cubic foot (approximately).

We now know something that will enable us to determine the burner required for the work.

First of all, the effective B.t.u. of the 600 B:t.u. gas may be assumed at about 80 to 90 per cent. To be perfectly safe we should take the lower figure, because, provided the required burner has an adequate range of heat control, it is much better to have too much than too little burner capacity. We will therefore assume 500 B.t.u. per cubic foot to be effective.

We know also that about 150 gal. have to be heated to 250 deg. Fahr. in about two hours. Now, 1 gal.

of water equals about 8.34 lb. Therefore, 150 gal. equals 150 × 8.34, equals 1,251 lb. We have assumed the initial temperature of the liquid we are going to heat to be 70 deg. Fahr., so that we will have to heat through 200 — 70 deg. Fahr., equals 130 deg. Fahr., or if raising up to boiling. Now, the B.t.u. required to heat 1 lb. of water through 1 deg. Fahr equals 1 B.t.u. (the specifice heat of water being equal to 1, and to heat other different liquids through different temperature ranges depends on their specific heat).

Now, 150 gal. of water equals 1,251; specific heat of water equals 1; temperature change from 70 to 200 deg. Fahr. equals 130, or to the nearest 50, and allowing for reaching 212 deg. Fahr., say 1,500. Therefore, B.t.u. required per hour equals 1 × 1.50 × 1,251, equals 187,650 B.t.u.

Assuming on the above-mentioned data a net efficiency of 33 1/3 per cent, we need a total utilizable fuel output of 100/33.3 × 187,650 B.t.u. per hour, equals 3 × 187,650, equals 562,950 B.t.u. per hour.

Now, 1 cu. ft. of city gas equals, say, 600 B.t.u. Thus we require (approximately) 56,295/600 cu. ft., equals about 940 cu. ft. of gas.

But the beer (assumed water) is to be heated in two hours. Therefore, the gas requirements per hour are 940/2, or 470 cu. ft. per hour.

This is very easily accomplished with a four-ring multitube burner‡, which has a capacity of 550 cu. ft per hour and thus gives plenty of leeway. By a similar computation, if the work could have been accomplished in a greater length of time to enable the gas to be reduced to, say, 350 cu. ft. per hour, a three-ring multitube burner could have been used.

The size of flue connection and the total area of secondary air holes (if required) must naturally be adequate, or proper combustion will not take place.

In this connection it should be pointed out that although a relatively large amount of flue area may be necessary when coal is burned in a furnace, this area must be suitably reduced when the conversion is made to gas, in order to secure maximum efficiency. (Ten cubic feet of gas per hour usually requires 1 sq. in. of flue area when atmospheric burners are used.)

This is a matter frequently occurring, and is perhaps most commonly met with when changing over such equipments as stereotype furnaces to gas.

In such cases the ash-pit door and fire doors have to be closed almost completely except for a small peek-hole; the burner is then lighted and turned full on and the damper shut. Hot flue gases will emerge from the peek-hole. Proper adjustment is made until a "balanced draught" is obtained which will exist when the hot flue gas just ceases to emerge from the peek-hole. It is not usually possible to work to a balanced draught condition of such a slender amount in the case of coal fires, due to the fact that the only velocity the flue gases have is that brought about by their temperature and the length of the smokestack.

A gas burner, on the other hand, especially when operated with a blast, gives to the flue gases an initial velocity of their own and then makes it possible in many cases to restrict the flue to the lowest limits.

Description of High Power Atmospheric Concentric Burners

The high power burners are substantially made. They are especially designed to consume the maximum amount of gas in a small area with the highest efficiency obtainable. They are cored and may be subjected to intense heat.

Multitube burners are similar to drilled burners, except that in place of drilled ports steel tubes are employed. Owing to their construction perfect combustion and a very high efficiency are the result.

A perfect supply of secondary air is supplied to each flame and the castings cannot become overheated owing to the fact that the heat downward is diffused to a large extent by means of the tubes.

These burners may be placed closer to the vessels than the drilled type, and will be found to have a longer life. Should they be subjected to extremely heavy work and the tubes be found to burn yellow after a year or two, a punch driven down into the tube will remedy the trouble and give them another lease of life for a similar period, which may be extended almost without limit. These burners will show an efficiency of from 5 to 25 per cent higher than the drilled type, depending upon the application.

Burners must have accurately proportioned gas orifices, air mixers and flame ports to give the highest efficiency.

Atmospheric burner capacities are rated at a 2-in. gas pressure in all cases.

Heights of burners where marked "net" do not include floor plates, stands, etc., where these increase the height. The net figure is the minimum height which the burner may be made to occupy. (The height does not, in any case, include the head room required for combustion; see below.)

(*Continued on page* 211.)

‡ DETAILS OF HIGH POWER ATMOSPHERIC BURNERS

(Multitube Ring Type)

No.	Dimensions (Inches) Diam.	Hght. (net)	Lth.† C.-M.	H.R. C.†	Gas Conn.	Gas Consumption (Cubic Feet per Hour) Rg. 1	Rg. 2	Rg. 3	Rg. 4	Total	Shipping Weight (Pounds)
21M	5¼	5¼	15	2	⅜	55	...	...	...	55	25
22M*.....	9½	5¼	18	2½	1	55	110	...	...	165	50
23M*.....	14½	5¼	18	3½	1¼	55	110	165	...	330	85
24M*.....	19½	5¼	24	4½	1½	55	110	165	220	550	150

* Pushbutton pilot light fitted to these burners if so required.

† For explanation of symbols see below.

American Gas Engineering Journal

SIXTY-FIRST YEAR

Published Weekly by AMERICAN GAS LIGHT JOURNAL, INC., 150 Nassau Street, New York, N. Y.

Elbert P. Callender, Pres. S. G. Krake, Vice-Pres. Frederick A. Southworth, Sec'y-Treas.

EUGENE C. MILES, Editor

Subscription $3.00 per year, in cluding postage in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines; in Canada, $4.00; foreign, $500—Single Copies, 10 cents

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As the Journal Views It

The Demand for Motor Fuel

In England they have not abandoned the thought of using city gas for propelling motor vehicles. They demand Government encouragement to the production of benzol. In our own country they are equipping to extract oil from shale. And back of all the activity—in fact impelling it—is the apprehension, in some cases the expectation, of gasoline falling short of economically meeting the rising demand for fuel for motor-propelled machines.

Within the potentialities of the American gas industry lies the most likely substitute for the fuel that may fail to meet the call. Perhaps even here lies within its potentialities a competitor that may divide with it the present market at prices that will be lower to the consumer yet profitable to the producers.

What effort is the American gas industry making towards producing this alternative fuel, this fuel which on a merit basis stands higher even than gasoline? Is it anything greater than isolated and sporadic ventures of a few companies?

The motor fuel market—the benzol market—is looming up as a field as rich in promise as was industrial fuel a few years ago. Are we going to enter it as gingerly and as hesitatingly as we did the industrial field?

There is need of a Moses or two to get us started in this new field. And the longer he, or they, fail to put in appearance the greater will be the cost to us in lost opportunities.

Not the Hours of Working, but Its Degree of Intensity that Brings on Exhaustion

One reason why the world has not progressed to the degree it could have lies in the persistence of the idea that a man is not industrious unless he works from sunrise until sundown—and then some more. As a consequence the world has failed to get a great deal out of many men that they could have given had not the beliefs it cherished sapped out the creative and the inspirational energy that was within them.

A man has given his all to his company when at the end of a day's work, whether it is of two or ten hours' duration, he has sapped to the last degree his mental or physical energy.

Wisely guided companies will enlist within their ranks only men of vigor and power.

The executive who makes momentous decisions in a brief space will exhaust himself with the solution of very few problems and the expenditure of a meager amount of time.

The bookkeeper, posting figures that are almost routine, will have considerable energy left at the end of eight hours, and were it not for the enervating effect of monotony, would be able possibly to continue on for ten or twelve hours a day for considerable time without collapse.

Intelligence must be used in proportion to the intensity of the work to the time devoted to the company's tasks in determining whether an employee is giving his best or not. The fellow who is through in four hours may expend more energy and produce more even than the employee who plugs on long after hours. Has the hare done less when he travels in a few minutes the mile it takes the turtle days to attain?

Why Editors Enjoy Their Work

The following letter was received just as we were going to press. We liked it and we believe some of our readers, especially the older ones, will like it as well:

4123 Lake Park Avenue,
Chicago, Ill., Sept. 2, 1919.

AMERICAN GAS ENGINEERING JOURNAL,
New York.

Gentlemen: I take pleasure enclosing check for $3 for subscription to the JOURNAL, of which I have been a reader for forty-two years and a subscriber for about thirty years.

I am practically out of the gas business, having retired from active service with the Peoples Gas Light & Coke Company, of this city, after many years of employment in various capacities, lastly as salesman in the main office, and retired on a pension a few years ago.

Your journal is a welcome guest to my home every Monday, and I derive great pleasure in perusing its interesting pages.

Wishing the JOURNAL more success, as it so richly deserves, I remain

Yours truly,
O. R. MARSDEN.

Suction Gas Producers

The problem of marine propulsion by means of suction gas-producing installations is again receiving considerable attention in some quarters, notwithstanding the present high price of fuel. This form of prime mover has been frequently experimented with in Great Britain, but it has not met with the success that would warrant its adoption in general trading vessels. The troubles experienced with seagoing vessels has generally been in connection with the scrubbers, in which a copious supply of fresh water is necessary for cleaning of the gas before it reaches the engine cylinders. Salt water has proved disastrous for this purpose, and in cases in which dry scrubbers have been tried they did not meet with success where long, continuous service was demanded. With river craft, however, where plenty of fresh water is available, a considerable measure of success has been obtained. These craft are generally fitted with small reciprocating engines, which have proved very wasteful; but with the introduction of producer plant the fuel bill in some cases has been reduced to about one-third of that obtaining with the steam engine. In Britain the subject of gas propulsion has not received the attention it deserves, whereas American engineers have been forging ahead in experimenting with different types, with the result that quite a number of gas-engined commercial vessels have been built in that country which have met with some success. It is interesting to learn, however, that the problem is now being seriously considered in Britain, and a new type of producer and scrubber is being manufactured with which, it is claimed, the troubles experienced with former types will be entirely removed.

570 B. T. U. Standard Set for California

After Sept. 1, all gas served by gas utilities of California to consumers must contain 570 B.t.u. on an average each month with a variation of not more than 30 units. No exception is permitted except by special exemption of the commission. This is the fundamental requirement of new standardization of quality and service of gas utilities established by the railroad commission in its general order No. 58, effective Sept. 1. The order also provides a complete set of general rules governing the relations between gas utilities and their consumers. In addition special rules governing the Pacific Gas & Electric Company's field have been authorized to become effective also on Sept. 1.

In order to regulate the gas supplied to all California consumers the commission's gas and electric division will during the month expand its work and give regular attention to all the gas plants by inspection and testing. The commission has had a gas engineer making inspections of gas operations in a number of cities and towns of the State of California, and when the new regulations go into effect, routine inspections will be made of all gas utility properties throughout the State.

Government Committee of Experts Finds After Extended Study, that City Gas Has Big Place as Motor Fuel

(*Continued from page* 203.)

of power for the compressor motor will show still more to the advantage of the compressed gas. Taking into account the pre-war price of gas (2s. 7d. per 1,000 cu. ft.), this would alone increase the economy to 48.2 per cent."

Charge for and Measurement of Gas

As to the price to be charged for gas, the committee expresses the opinion that it will be in the interest of gas undertakings to allow as favorable a scale of discounts to consumers for traction purposes as to any other buyers of gas for power generation, provided the load is a reasonably steady one and the point of supply not at so great a distance from the gas holder as to be detrimental to ordinary consumers.

As to the measurement of the gas, the report states:

"We have been able, since the presentation of our interim report a little more than fourteen months ago, to carry further our study of points affecting the general use of rotary, inferential or other gas-measuring recorders. We strongly recommend the adoption of such new types of meters, on account of the economies in material and space which accompany their use, subject to a certificate of accuracy (within 2.5 per cent plus or minus while capable of passing gas) by any meter-testing authority, that all rotary meters should be tested with a "flying" start, and that after testing there should be attached to each such meter a metal badge indelibly stamped to show the top and bottom limits in cubic feet per hour between which the meter is correct within that latitude —e. g., this meter has been tested and found correct between 1,000 and 10,000 cu. ft. per hour.

"While the original cause for our interim recommendations on this subject—the acuteness of the war period shortness of tinplate—has to a large extent disappeared, we feel that consumers of gas whose class of use calls for the delivery of comparatively large volumes in relatively short periods of time are somewhat handicapped by the restrictions on the use of such types of gas meters resulting from the operation of Sections 12 and 13 of the Sale of Gas Act, 1859 (rules to be observed in stamping and testing meters). We are of opinion that the difficulty would be overcome if power were given to the Board of Trade to approve other suitable types of gas meters and to prescribe rules under which they should be tested, and, if necessary, conditions under which they should be used, and that an inspector should have the same power of stamping and testing meters of a type approved by the Board of Trade as that given under the Act of 1859."

The committee is of opinion, having regard to the apparent imminence of legislative sanction for a permanent measure of discretion to gas undertakings as to the calorific value of gas sold to the public, that a buyer of gas for traction purposes should be entitled at the time of purchase to be given any available information respecting the ruling minimum calorific value of the gas supplied and the requirements of air for its complete combustion.

Compressed Gas in Cylinders

It is stated that the commercial extension of gas traction by the use of compressed gas depends chiefly upon the adoption of equipments which comprise steel cylinders as the containers.

"The sum total of experience with flexible containers during the past three years makes it clear to us that while this class of equipment has proved to provide a cheap and serviceable alternative to petrol under war conditions in some thousands of cases, relatively few commercial users of road motors, and practically no private motorists, will continue under peace conditions, with metal cylinders and compressing plant available, to accept the obvious inconveniences inseparable from the use of such flexible containers unless petrol supplies fail or the price of that fuel keeps above, say, 3s. a gallon.

"We are of opinion that many commercial and economic transport developments, which can be realized only by the fullest degree of permissible encouragement for the production and application of indigenous fuels, will be seriously retarded if advantage be not forthwith taken of new and scientific methods that are recorded as having been adopted during the intervening period of twenty-four years in the steel-making and cylinder-making industries.

"It is of special importance and direct significance that we should draw attention to the all-round improvement of works control and inspection, due primarily to the necessity for the steel makers to comply with the specifications of motor-car and aircraft manufacturers, and thereafter to the necessity on the part of the cylinder makers to meet the most exacting demands of the Royal Air Force as regard light yet strong and ductile cylinders for use in aeroplanes and airships. Details of the numerous steps and stages in these truly remarkable series of developments have been placed before us in the course of proceedings at several of our meetings. The wide range of the evidence which we have taken and collected has covered the whole field of inquiry relating to cylinders for storing and carrying gases under high pressures, and the confidence with which we make our recommendations in respect of approved scope for the equipment of road motors with cylinders of high-carbon or certain alloy steels is in great measure attributable to our being satisfied with the evidence from qualified representatives of the steel and cylinder industries, and with official evidence on behalf of the Aeronautical Inspection Department.

"We find that the risk of explosion with any usual public-supply gas on its being compressed and delivered into cylinders is less, other conditions being equal, than with oxygen, but precautions must be taken at all compressing installations to prevent aspiration of air on the inlet side of the compressor. This necessary safeguard can be achieved by the arrangement of any suitable 'telltale' device, or by the maintenance at all times of a pressure markedly above atmospheric in the supply pipe leading the gas to the compressor. No accident, due to ignition, explosion or 'back-firing,' can result from the use of a new or other cylinder which contains air at atmospheric pressure at the time of its being connected to the

compressor circuit for filling with town gas, either during the filling operation or during the later consumption of the gas in a motor vehicle."

The committee recommends that no individual firm or company be allowed to compress gas for traction purposes, or to supply or charge cylinders for such purposes, except after notification to and registration by the Ministry of Ways and Communications, but this recommendation is not to be held to prejudice the continuance of commercial scale experiments at the hands of responsible undertakers, such as the London General Omnibus Company, Ltd., other public service companies, municipal authorities or organized motor-transport companies.

"The object of installing storage vessels to accumulate compressed gas is to provide for the rapid refilling of the cylinders which are carried in the motor vehicles. A usual system of storage is to employ a wall battery of cylinders, disposed vertically and connected in parallel, with an individual cylinder capacity of 400 cu. ft. of free gas if charged to 120 atmospheres, so that ten of such cylinders represent a storage capacity of 4,000 cu. ft. of free gas. This class of battery has been commonly adopted by various Government departments during the war for gas-holding purposes, and it is the standard employed in the Royal Air Service. The cylinders are arranged with a common branch pipe at their lower ends and a common supply and discharge pipe connected to their uppermost ends. It is admissible to employ cylinders with only one necked end, provided they are disposed vertically with the common inlet and outlet connections, and supplementary draining connections, below the lower (necked) ends.

"While there is a general preference for double-ended cylinders, so that water and other deposits from the gas may be drawn off undisturbed at intervals, which facility for draining cannot always be arranged as readily with single-necked cylinders, we do not specify the double-necked class of installation. The probability of leakage is reduced by the elimination of valves other than the three which are necessary for control of the battery: one for drawing off any residue at the bottom, one on the supply pipe and one on the discharge pipe. A common pipe line can be utilized for all three purposes.

"It may in some cases be desirable to insert in the pipe line, between the compressor and any storage cylinders, some form of interceptor, in order to facilitate periodical removal of any hydrocarbons which assume the liquid form when the gas is compressed, and so to prevent such deposits from passing into the storage vessels. One form of interceptor to which our attention has been drawn consists of a domed chamber of steel, with an internal capacity of 0.25 cu. ft., fitted with a removable cover at the bottom, the gas from the compressor being delivered so as to impinge on a saucer-shaped receptacle carried on the inner side of the removable cover, and the gas exit being in the top of the dome.

"The maintenance of the requisite pressure in the storage cylinders, to compensate for delivery of gas for refilling purposes, can be arranged in one of three ways: (1) A standard pressure for the gas in the storage cylinders can be adopted at the necessary excess above the standard working pressure for the cylinders in the vehicles, provided the filling pipe, between the two sets of cylinders, is fitted with a trustworthy safety valve which will blow off at one-twentieth above the lower pressure; (2) the compressor by which the storage cylinders are filled can be run as a 'booster' while the discharge is taking place, and thereafter until the amount of gas delivered to the vehicle has been replaced; (3) a hydraulic accumulator can be installed in series with the connecting pipe which joins the lower ends of double-necked storage cylinders, so that the water may rise in them as the gas-pressure resistance is reduced, and inversely be expelled as the compressor in due course re-establishes the standard pressure. We are inclined, in the light of available experience, to favor the first of the above methods of charging, by reason of its being expeditious and simple."

Power from Gases of Low Calorific Value

Commenting upon what is described as "a somewhat wide misapprehension in relation to the effect of low calorific value of any particular gas upon its possible application for power purposes," the committee says:

"The power yield of a combustible gas in an internal combustion engine varies primarily with the heat value of a combustible mixture of the gas and the requisite volumes of air, and not with the heat value of the gas itself. A town gas of 450 B.t.u. (gross) per cubic foot requires 5.75 volumes of air for internal combustion, thus given per 100 cu. in. of combustible mixture delivered to the induction pipe of the engine a total of 3.9 B.t.u. A typical suction gas will contain 140 B.t.u. (gross) per cubic foot, but it will require only 1.33 volumes of air to one of gas for its internal combustion. Each 100 cu. in. of such a combustible mixture delivered to the induction pipe of the engine will, notwithstanding the poorness of the gas itself, contain a total of 3.5 B.t.u. The apparently weak gas is thus seen to be a satisfactory fuel, subject to other considerations, such as velocity of flame propagation and mean effective pressure in the cylinder.

"We wish to draw special attention to the fact that gases of low calorific value may, in consequence of their smaller requirements of air, be nearly as good as town gas for power purposes, and it may be of interest to put on record here the fact that, using ordinary petrol, the number of B.t.u. per 100 cu. in. of combustible mixture delivered to the induction pipe of the engine is usually found to be between 4.25 and 4.5."

Liquefied and Absorbed Gases

The committee has examined the latest methods of storing liquefied gases in vacuum-jacketed vessels, and has also considered the cost of liquefaction of hydrogen, methane, carbon monoxide and ethylene.

"Apart from the commercial difficulties which lie in the way of obtaining large and regular supplies of a suitable combustible gas, we find that the use of vacuum-jacketed vessels for traction purposes is impracticable. Considerations of first cost, maintenance and recharging all militate against development in this category, while the necessity to give free vent to the contents of any vessel which is filled with liquefied gas introduces an obvious complica-

tion and danger with a combustible gas intended to be used on the highway for the propulsion of vehicles or, incidentally, to be stored in such vessels while the vehicles are standing overnight or at other times inside buildings.

"We have studied available data and records in relation to the absorption of gases by various liquids and their absorption by various solids. The facts that an ordinary town gas is compound in character, and that the constituent gases have different specific ab/adsorptions, are among the primary difficulties by which we were confronted in this branch of our investigations, and we therefore directed our inquiries and tests more especially to the predetermination of ab/adsorption ratios, in order to ascertain if the limiting factor of weight was in any case likely to be amenable for this class of storage.

"Our investigations concerning possibilities for the storage and supply of town gas under pressure by the utilization of ab/adsorbents included experiments and tests with charcoals, crushed coals, paraffin oil, engine oil, olive oil, lard oil, linseed oil, water, carbon tetrachloride, glycerine and benzol. The tests with charcoals were repeated after pre-heating to 300 deg. Cent.

"We consider that it is desirable to make reference to certain factors other than the dominating one of gross weight in relation to volume of gas, which in practice render nugatory the superficial attractiveness of proposals for the adoption of any ab/adsorption system for traction work. These are: (1) The process of ab/adsorption is exothermic and requires definite periods of time, thus involving in any event a change-over of cylinders or considerable delays on recharging: (2) a container cannot be filled with ab/adsorbent owing to the reduction of area in contact with the gas and to the introduction of an element of danger if an external source of heat accidentally raises the temperature of container and contents; (3) no ab/adsorbent is available which takes up or subsequently liberates the several combustible constituents of town gas with any approach to the requisite degree of uniformity or to any useful extent.

"We find that there is an increase of weight, compared with that imposed by the use of cylinders containing only gas under compression, in all cases which we have considered, and no saving in the cubic space occupied, when ab/adsorbents are introduced.

"We are of opinion, having regard to the relative simplicity and other advantages of portable gas supply (1) in flexible containers at or slightly above atmospheric pressure, (2) under compression in semi-rigid or rigid containers, and (3) from self-contained suction-gas producers, that no commercial or technical advantage will accrue from attempts to utilize ab/adsorbents for the purposes in view unless a specific ab/adsorption of at least 30.1 at atmospheric pressure be hereafter obtainable with a low-priced material. No material is at present in view which complies with this requirement, the nearest approach being apparently provided by the use of a mixture of cocoanut charcoal and finely divided iron or other metal."

In regard to proposals for enriching town gas for motor purposes, the committee says:

"We have considered numerous alternative methods of enriching town gas. Tests have been made by the ordinary process of surface contact, by spraying volatile liquids into the gas which it was sought through a column of the enriching liquid. The liquids to enrich, and by allowing such gas to rise vertically utilized for the indicated purposes have included petrol and benzol. The addition to the calorific value of any gas under treatment has at no time exceeded 6 per cent, and we are of opinion, having regard to the fact that the value of a gas for power purposes varies with the calorific value of the combustible mixture after admission of the requisite volumes of air, and not with the calorific value of the combustible gas itself, that the extra provision necessary in any vehicle to allow such class of enrichment does not yield commensurate advantage.

"We have not investigated the use of acetylene gas as a possible enricher, and we are of opinion that until further investigations are made it is inexpedient to make any recommendation in favor of such use, but we have collected sufficient information, with the co-operation of the Foreign Office, concerning the use of acetylene for such purposes in Switzerland and other Continental countries, to satisfy us that, subject to there being supplies of calcium carbide available at not more than £5 per ton, there are commercial possibilities for its employment in the indicated manner in particular cases. The lowest prospective quotation for acetylene gas, supplied in England in loaned cylinders, based on carbide at £15 per ton, is £7 per 1,000 cu. ft., and the lowest estimated capital outlay for a production of 5,000 cu. ft. of free acetylene per twelve hours is £500, to cover acetylene plant only—generator, gas holder and purifier—but no buildings."

Attention has been directed to the possibility in special cases of using naphthalene purified by sublimation as an enricher of suction gas, town gas or the vapors of liquid motor spirit. The results of inquiries into proposals of the kind enable the committee to recommend that certain experimental work done by officers of the Birmingham Corporation Gas Department should be reconsidered in relation to the employment of naphthalene as an enricher, rather than as a sole fuel, more especially in conjunction with portable suction-gas producers.

Use of Gas in the Manufacture of Drinks of the Beer Type

(*Continued from page* 206.)

H. R. C. (head room for combustion). This is the distance required for proper combustion above the top of the burner. The figures given apply to average conditions. If necessary, the burner may be placed closer to the object to be heated, with satisfactory results. On the other hand, this distance should be increased somewhat where the flue conditions are such as to tend to smother the flame.

C. to M. The length from the center of the burner to the outer end of the mixer, or center of mixer tee, in blast burners.

Size of gas connection is the size of cock or manifold and not the size of pipe necessary for gas supply.

Service Builds Up Sales

There Are Many Ways of Giving an Extra Service to Patrons and Prospective Patrons Which Afford Them Great Conveniences and Which Are Proven to Have Reaped Additional Sales — The "Extra Service" Also Does More Than Create Sales — It Creates Invaluable Good Feeling

By W. B. STODDARD

"Service with a smile!" How's that for an effective slogan? It is one that has been adopted by an enterprising dealer in photographic supplies up in Portland, Ore., and it has brought him many customers, for every one prefers to deal with a pleasant salesman rather than a grouch. Stamped on all his stationery and wrapping paper is:

TO MY PATRONS

My custom and policy is to see that every patron is pleased. It is impossible to serve you all personally, but I have tried to select salesmen who will give you the best service at all times. If at any time you should receive discourteous treatment, or are dissatisfied with a sale, I would consider it a personal favor if you would call at my office and allow me to make amends.

He has capitalized his smile, for many of his ads are adorned with his face wreathed in a smile—no, not a grin, but a warm, pleasant smile that inspires one with confidence in the man and his merchandise. One of his most effective methods of advertising is by signs in street cars, using his slogan of "Service with a Smile," a cut of his smiling countenance, and at the bottom, "I am not nervous, so give you good service."

Pleasant, efficient service is one of the most valuable assets of a firm dealing in gas supplies, and the company that shows a genuine interest in its customers is going to get the trade every time. This was the thought of W. H. Ellis, manager of The Ellis Company, Vandalia, Mo., who talked interestingly of the service of his own company: "Not long ago, when passing through our salesroom, I noticed a stranger sauntering about examining the gas appliances and it struck me that if a man had enough curiosity to enter a strange store he would pursue his investigations even further if he were cordially invited to do so, so I immediately had a large card lettered and set near the entrance:

ARE YOU A STRANGER IN TOWN?

If so, make yourself at home here. Drink our ice water, read our paper, sit down and smoke your cigar, and don't hesitate to ask us any information you wish to know about our city.

"All of our salesmen are instructed to be extremely courteous to all strangers and as example is better than precept, I try to show them by my own interest in all visitors to the store. Smirks and grimaces, and the fussy attentions bestowed by some of the cheaper class of stores have no place with us, but we endeavor to be genuinely interested in our patrons and their wants, and we see all the time many evidences that this is appreciated."

Among the many conveniences supplied by this firm was a pencil sharpener, attached to a post near the entrance, for the use of school children; a mail-box for those who did not wish to make a trip to the post office, and a shelf containing a city directory, catalogue of schools, railroad guide and telephone directory. They also earned the everlasting gratitude of the ladies of the town and country, by providing a railed-off space, with comfortable chairs, and a table containing several of the late popular magazines and fashion journals. This was especially enjoyed by the rural trade, who found it an excellent place to wait for their men folks or to meet friends. Not being shut off in a stuffy "ladies' rest room," from the sheltered nook they had an opportunity to view almost the entire large salesroom, and in this way a number of household conveniences—such as hot water heaters, gas grates, gas toasters, and mantles—were brought to their attention, resulting in many additional sales. During the hot season the firm secured a big supply of palm leaf fans, on which they had printed: "We thought of you this hot day and saved a fan for you." One of these was presented, with a smile, to every lady who came to their rest pavilion, and one can imagine how much this little attention was appreciated, especially as the fans bore no advertisement whatever. Each week the company advertises its service in the newspapers, as regularly as any merchandise, calling attention to the various conveniences it offers its patrons.

Schelly & Bros., Allentown, Pa., dealers in gas appliances, have installed a series of telephones for the benefit of their patrons. In front of these was a four compartment showcase, tilted as such an angle that the

contents could be seen by anyone in the booths. These cases were lined with blue silk and held gas irons, toasters, hot water shaving outfits, and percolators. "The men or women in the booth, while waiting for their party," said Mr. Schelly, the manager, "naturally look around, and if there is something interesting and colorful close at hand their gaze is naturally focused on that. In this way many household helps are brought to their attention." The telephone booths are in the center of the big salesroom, and around them are wicker, cretonne upholstered settees, for those who have to wait, either to telephone, or to be waited upon. Within easy range of their vision are tables set for lunch with gas samovar; for breakfast, with coffee percolator and toaster; and for dinner, again with the percolator. People sitting at their ease are in a better frame of mind, and more inclined to look with favor upon what they see, and many a sale has been traced to a few minutes a woman or a couple have sat waiting their turn at the telephone.

In another way, also, the firm has brought home to their patrons the convenience of the telephone. This was done by means of a short letter sent to all their patrons. It was a duplicate one, of course, but the name and address was filled in on the typewriter, giving it a more personal touch. The letter follows:

DEAR MADAM:

Probably you have had in mind for some time the purchase of some household necessity from us, but could not find the time to come down to our salesroom, or else it slipped your memory when you were down town.

Telephone: It's the easiest way, and you will get prompt attention, equal service, and we guarantee satisfaction the same as if you called personally. Just ring up Main 1333.

Cordially yours,
SCHELLY & BROS.

Service is so much a part of any modern business that as much consideration should be given to it as to any line of merchandise, and the same amount of publicity should be given to it as to any department, so that the public may learn what to expect in dealing with it. This was the idea of the Minneapolis Gas Light Company, who emphasized the uniform courtesy that was to be met in dealings with them:

THANK YOU!

According to the lexicon of the Minneapolis Gas Light Company the "Thank you," spoken at the close of a transaction is infinitely more than a two-word expression which the salesman is expected to use because of common custom.

It is intended to reflect the sincere appreciation of the management, which is constantly striving, by every legitimate method, to deserve your patronage. It should be as genuine as the coins you receive in change.

President Jourdan Explains Situation in Gas Industry

Concerning the labor situation in the gas industry in Brooklyn, President James H. Jourdan, of the Brooklyn Union Gas Company, says:

"A small number of men employed by the Brooklyn Union Gas Company have not reported for work during the past week. The total number does not exceed sixteen per cent of the men upon the pay roll of the company. Some of the men who are away, I am informed, are ready to return. The absence of these men has not in any way interrupted the company's service to the public.

"In view of the many statements that are being circulated which are of a somewhat misleading character, the company deems it opportune to call attention to its attitude toward its employees—not only for the benefit of the public in passing judgment upon the question at issue with certain of its employees, but also for the benefit of the large majority of its employees who have shown their loyalty by remaining at their duties, and thereby co-operating with the company in its service to the public.

"The sole question at issue is one of wage, which question has been raised by the men in our meter shops, whose duties comprise the setting and removing of gas meters and the installation of gas ranges and other gas appliances, etc. Their demand represents an annual increase of approximately $200,000, over their present pay, notwithstanding that this class of labor has had its wages increased during the past two or three years 60 per cent to 80 per cent. If the same demand were carried throughout the company it would represent an annual increase in the pay roll, of over $1,500,000 over the existing pay.

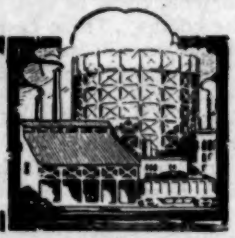
"The company has always been mindful of the welfare of its employees, not only by the voluntary increases in compensation which have been made from time to time, but also in many other ways. It has paid liberally for overtime; it has given at least a week's vacation with full pay to all employees of all departments; it has paid for holidays and for absence due to sickness; it has given free medical attendance; it has given full pay to injured employees, although the State Compensation Law requires payment to be made only after the first fourteen days of disability unless such disability extends beyond forty-nine days, and requires the company to pay only two-thirds wages; and it has given unlimited medical service, although required to give medical attendance for only sixty days.

"The company carries life insurance for each employee in amount of his yearly compensation, without any charge to him whatsoever. The company granted full pay during absence to those employees who were called into the military service during the Mexican border trouble, and during the World War; the company continued the life insurance on all of its employees who entered the military or naval service and upon their return reinstated them in their former positions. It increased compensation. The company has been considerate of its old and superannuated employees, by placing them on its pension roll when incapacitated, and has likewise granted life insurance to them.

"We have already received letters of appreciation from many of our employees relative to the increase in wages made throughout the company several days ago, and feel assured that a large majority recognize the fair treatment that has always been accorded to them by the company. A very large number of our employees have been in the service of the company for a great many years, and we believe that they will not be misled by the efforts of a comparatively few ill advised individuals (many of whom are comparatively new in the service of the company) to disturb the relations existing between the men and the company."

E. W. PATTERSON, until recently on the staff of the Consumers Gas Company of Toronto, is now manager of the Dodd Heating System, Limited, of Toronto.

NEWS OF THE GAS INDUSTRY



Suggested Modifications of Doherty Plan of Rate

The State attorneys of Kansas are planning to take an active hand in the settlement of the gas rates for the Kansas Natural and Wichita Natural Gas companies. The proposed Doherty plan, with three sets of charges is believed to be based on correct principles, but there are some modifications needed in the prices quoted, they assert.

Assistant Attorney General Matson has suggested a lighter "demand" charge and a heavier charge for gas.

"In view of the fact that a public statement has been made that the books of the gas companies disclose that 80 per cent of the number of patrons of the gas companies use 4,000 ft. and less each month with maximum demand at 100 ft. per hour," Mr. Matson said, "I believe the rate would be more equitable to the 80 per cent of the users of natural gas if the demand charges were reduced and the price of gas increased.

Oklahoma Company Making Improvements

The Oklahoma Natural Gas Company, owner of the Blackwell-Enid (Okla.) pipe line, is constructing a $300,000 booster station on the Chickasha River at Blackwell, Okla. This station has been under construction for about a month and will insure a much better supply of gas for Enid, Okla. The purpose of the station is to maintain both pressure and supply of gas. It will afford a maximum supply of about 8,000,000 cu. ft. daily to Enid, Okla.

Spending $8,000 on Improvements at Davenport

The Peoples Gas Light Company has begun improvement work at Davenport, Iowa, which will total approximately $8,000. As the result of the improvements under way the equipment for purification of gas will be completely modernized and enlarged.

Answers to Prize Contests Brings Forth Startling Figures of Coal Costs for Cooking

The Clinton Gas Light Company, of Clinton, Mass., recently conducted a contest among its customers and others interested, and offered at that time, three prizes for the ones who had correct answers for the largest number of the questions asked by the company. The answers to the questions brought forth the information that the average coal range uses 50 pounds of coal daily for 30 days, or 1,500 pounds of coal monthly at $12.50 a ton. This means that $9.37 a month is spent for coal by the average housekeeper, plus $1.50 for wood and 41 cents for removing ashes, total cost of the average coal range each month coming to $11.28. This, of course, does not include extra trouble, time, the dirt and inconvenience of waiting for a good fire.

In answer the company states that for $11.28, you can use over 7,000 cu. ft of gas at $1.50 per 1,000 (enough for a month's cooking, heating water, and heating the kitchen) and save all the extra inconvenience, ashes and dirt.

San Diego Company Will Lay 4-Inch Main Under Bay

Application has been made by the San Diego Consolidated Gas & Electric Company, of San Diego, Cal., for permission to lay and maintain a 4-in. gas main under San Diego bay, between the cities of San Diego and Coronado, Cal. This will improve the company gas service in Coronado and also serve as an alternate for the present gas main. The additional service is intended to serve as a protection in case the present line of pipe should be put out of commission because of corrosion or for other causes and will guarantee the Coronado consumers against possible discontinuance of service because of breaks.

Oklahoma Company Issues Shortage Warning

Warning has been given by officers of the Oklahoma Gas & Electric Company to its consumers to prepare against a possible shortage of gas this winter. At the same time, however, it was said the company hopes to have completed before winter another pipe line in the Southwest Oklahoma gas field that would afford all the gas necessary for a heavy demand. In this connection, if such supply is given to the satisfaction of the Corporation Commission, there is an order effective several months ago that automatically increases the price to domestic consumers to 50 cents net a 1,000 cu. ft. It is now 35 cents, with 10 per cent discount. The Oklahoma Natural Gas Company furnishes the supply to the Oklahoma Gas & Electric Company and to about forty other distributing companies in the State.

$1.75 New Rate Petitioned in Babylon, L. I.

The Long Island Lighting Company has asked permission to raise its rate obtaining in the town of Babylon, L. I. The minimum charge under the franchise is $1.50 for 1,000 ft. The company, through its spokesman, Mr. Stoltz, said it was losing money and asked for permission to raise its rate from $1.50 to $1.75 per 1,000 ft., and also to fix a minimum charge of $1 per month. The board declined to take formal action and Mr. Stoltz said the company would file the announcement and the matter would go before the Public Service Commission.

The company claims that it has never made any money on the gas end and since the increased cost of coal and labor it has been a heavy loser.

The Long Island Lighting Company took over the holding from the South Shore Gas Company, which secured the original franchise in 1908.

Portland Company Denied New Minimum Rate Charge

A decision was rendered by the Public Utilities Commission of Maine denying the application of the Portland Gas Light Company for permission to increase its minimum charge from $6 to $12 per year.

"Our thought and conviction is that raising the minimum and affecting, as it does, only about 16 per cent of the total number of customers, would not only not be good business for the company but would create an undue hardship upon these small customers," says the commission in their decision.

The company has approximately 16,000 customers. The accounts of the company show that of this number 2,479 now take less than $12 worth of gas per year, and this number would be directly affected by a twelve-dollar minimum. Six hundred sixty-seven customers take less than $6.00 worth of gas per year, and in the case of each of these customers a twelve-dollar minimum would result in doubling their rate. At the request of the commission the company made as full an investigation as was possible within the time available as to the status and standing of these 667 customers. Such investigation was confined to about fifty per cent of those customers, or, to be exact, to 333 in number. Such investigation showed that many of these customers have only a very limited use for gas and that there is no probability of such use being increased. These customers are therefore in the situation where if the minimum should be doubled they would be using less than $6.00 worth of gas per year, for which they would be required to pay $12 per 1,000 for gas.

Michigan Company Granted Increase — Will Make Extensions

An increase of 15 cents a 1,000 cu. ft. of gas was authorized by the City Commission of Pontiac, Mich., in favor of the Michigan Light Company. The resolution is made revocable at any time, and is conditional upon the company's making extension of service to new patrons, on the basis of 100 ft. of pipe laying for each connection. The resolution calls for the extension of service to all now having applications filed, within 90 days and thereafter within 30 days on new applications.

Stringent Methods and Total Discontinuance of Construction Allow Company to Eke Out 5 Per Cent Return

The City Commissioners of Galveston, Texas, have no authority to regulate nor reduce the gas rates now being charged in Galveston, Texas, by the Galveston Gas Company, Ballinger Mills, attorney for the Gas company said at a public hearing held at the city hall. Mr. Mills stated the gas company is operating in the city under a franchise granted when the company was chartered by special act of the Texas State legislature in 1856. The stockholders of the company have changed since the company was formed, but the same corporation exists, he declared.

P. E. Nicholls, vice president and general manager of the gas company, presented a financial statement for the fiscal year ending July 31, 1919, and for the month of July. The company is making less than 5 per cent on its valuation, Mr. Nicholls declared. Mr. Nicholls in his statement said he did not admit the power of the commissioners to regulate the gas rates in the city but that the information had been presented as a matter of courtesy in response to the request of the City Commissioners.

The minimum charge for gas in Galveston is $1.45 a 1,000 cu. ft., with a 5 per cent discount if the monthly bill is paid within ten days, Mr. Nicholls said. The scale of monthly charges follows: First 5,000 cu. ft., $1.45; second 5,000 cu. ft. $1.35; next 5,000 cu. ft., $1.25; next 5,000 cu. ft., $1.10; next 5,000 cu. ft., 95 cents, and for all in excess of 25,000 cu. ft., 85 cents.

The statement of the gas company follows:

"While we do not admit the power of the board to fix gas rates and by appearing before you we do not waive any right to question such power, as a matter of courtesy we submit the following in response to your notice:

"The present value of our plant is $1,400,000, as nearly as we are able to estimate it in the short time available for that work. During the twelve months ending July 31, 1919, our gross income was $227,278, our operating expenses, including the usual depreciation charge, were $164,569, and net earnings were $62,709. During the month of July, 1919, our gross income was $19,380, our operating expenses were $11,775, and net earnings were $4,943. From these figures you can readily see that we are now earning an adequate return on our investment.

"It was only by adopting th most extreme measures, measures that can not be continued very much longer, that we were able to earn the amounts shown above. Since 1917 our number of regular employees has been reduced from sixty-seven to forty-nine, or 27 per cent, but their average pay has been increased from $67.97 to $97.61, or 43 per cent, the total pay roll showing only a 4.7 increase. We have discontinued all construction work and are doing only that maintenance work that is absolutely necessary. This policy, together with the fact that we have been operating on some long-term fuel contracts, all of which have expired within the last few months, is solely responsible for the fact that we have not been forced to increase our rates in order to exist.

Two of Biggest Natural Companies Plan Merger

Consolidation of the two biggest natural gas companies in California, the Valley Natural Gas Company and the Midway Gas Company, under the name of the Midway Gas Company, is asked for in a petition filed jointly by the two companies. Involved in the consolidation is the purchase by the Midway Gas Companay of 4,000 shares of the capital stock of the Valley Natural Gas Company upon which the Midway company seeks to exercise its option to purchase for $805,000. The stock to be acquired is 1,000 shares in October, 1919, 999 shares in January, 1920, and 1999 shares in January, 1921. In the joint application the companies give the following reasons for their desire to consolidate:

"Each applicant is and for a period of more than one year last past has been engaged in the business of procuring natural gas from sources of supply in the Midway fields and distributing the same. Midway Gas Company has transported its natural gas for disposition mainly in the environs of the city of Los Angeles, and Valley Natural Gas Company has transported its gas for distribution wholly within Kern County, Cal. The supply of natural gas available to Valley Natural Gas Company is much greater than, with its present facilities, it can distribute; while Midway Gas Company's facilities and available market would enable it to dispose of a larger supply of natural gas than it now disposes of. The ef-

fect of the proposed lease of all the properties of Valley Natural Gas Company to Midway Gas Company will be to combine the business of the two companies and the supply of natural gas and decrease materially the wastage thereof, and to increase and extend the business now appertaining to each company. Applicants believe that the result of the proposed lease will be largely beneficial to the public now served by the respective companies and will better enable the extension of the service of natural gas to an increased number of consumers and throughout additional territory."

Gas Heating Will Be Featured to Exclusion of Any Other Heating at Steel Treaters Exhibit

The program for the national convention of the American Steel Treaters' Society, which will be held at the Seventh Regiment Armory, Chicago, beginning Sept. 23, has just been issued by the secretary of the society, Arthur G. Henry. As part of the greatest industrial exposition of the world, the steel treaters' convention is to play a most significant role, and gas heating is featured almost to the exclusion of any other phase of steel treating for this year's program. Taken in connection with the enormous number of heat treating exhibits which are planned, the exposition will give powerful momentum to the gas industry.

The exhibits of heat treating appliances mark the culmination of previous displays. The leaders in all lines of the industry are to be presented, and every devolpment of heat treating appliance and product will be demonstrated. Among the exhibitors are:

American Gas Furnace Company, New York City, furnaces.

Armour Institute of Technology, Chicago, booth 12, educational heat treating of steel.

Atlas Crucible Steel Company, Dunkirk, N. Y., booth 46 and room, tool-steel moving pictures.

Edgar Allen & Co., Ltd., Chicago, booth 83, tool steels.

Bell & Gossett Company, Chicago, booth 77, heat treating supplies.

Alfred O. Blaich Company, Chicago, booth 63, carburizing materials.

The Bristol Company, Waterbury, Conn., booth 45, pyrometers.

Brown Instrument Company, Philadelphia, booth 58, pyrometers.

Thos. Buchanan Company, Cincinnati, Ohio, booth 28, case hardening compounds.

Colonial Steel Company, Pittsburgh, booth 46, tool steel.

Columbia Tool Steel Company, Chicago Heights, Ill., booth 105, tool steel.

Chicago Flexible Shaft Company, Chicago, booths 60-61, furnaces (oil and gas).

Dearborn Chemical Company, Chicago, booths 100-101, quench oils and rust preventers.

Deegan Supply Company, Chicago, booth 68, laboratory supplies.

Denver Fire Clay Company, Denver, Colo., booth 47, gas and oil furnaces.

Ele-Kem Company, Chicago, booth 39, chemicals for heat treating.

Chas. Englehard, New York City, booth 102, pyrometers.

A Finkl & Sons Co., Chicago, booth 69, forgings.

Firth-Sterling Steel Company, McKeesport, Pa., booth 59, tool steel.

Ferguson Furnace Company, Toledo, Ohio, booth 22, furnaces.

General Electric Company, Schenectady, N. Y., booths 20-21, electric furnaces.

Claud S. Gordon, Chicago, booth 86, pyrometer engineers.

Gilbert & Barker Mfg. Company, Springfield, Mass., booth 125, oil and gas furnaces.

Robert K. Greaves, Chicago, booth 66, tool steels.

Holz, & Co., Inc., New York, booths 87-88, precision instruments.

E. F. Houghton Company, Philadelpiha, Pa., booth 5, quenching oils, carbonizing materials.

Hoskins Mfg. Company, Detroit, Mich., booth 81, pyrometers, electric furnaces, heat resistant castings.

Ingalls-Shepard, booth 43, forgings.

Ingalls-Shepard Forgings Company, Harvey, Ill., forgings.

Illinois Tool Works, Chicago, booth 49, cutters, hobs, reamers.

Ketler-Elliot Co., booth 31, twist drills and reamers.

Latrobe Tool Company, Latrobe, Pa., booth 99, twist drills.

Leeds & Northrup Company, Philadelphia, Pa., booths 41-42, pyrometers and electric furnaces.

Ludlum Steel Company, Watervliet, N. Y., booths 9-10, tool steel.

Midvale Steel & Ordnance, Philadelphia, booth 11, tool steels.

Mahr Mfg. Company, Minneapolis, Minn., booth 106, oil burning equipments.

Maxon-Premix Burner Company, Muncie, Ind., booth 62, burners.

Modern Equipment Company, Taunton, Mass., booth 57, oil, gas and electric ovens and furnaces.

Myall-Wallace Company, Chicago, booth 67, carburizing com. and heat treating.

Peoples Gas Light & Coke Company, Chicago, booth 30, industrial gas service.

Public Service Company, Chicago, booth 4, gas and electric service.

P. H. & F. M. Roots Company, Connersville, Ind., booth 51, blowers.

Rodman Chemical Company, Verona, Pa., booth 94, carburizing compound.

Railway Mechanical Engineer, Chicago, booth 1, publishers.

Roessler & Hasslacher Chemical Company, New York, booth 92, cyanide products.

Scientific Materials Company, Pittsburgh, booth 29, laboratory supplies.

Simonds Mfg. Company, Lockport, N. Y., booth 44, tool steel.

Standard Fuel Engineering Company, Detroit, booths 64-65, gas and oil furnaces.

Swedish Crucible Steel Company, Detroit, booth 78, carburizing pots.

Strong, Carlisle & Hammond Company, Cleveland, booth 50, oil and gas furnaces.

Surface Combustion Company, New York City, booth 6, furnaces.

Taylor Instrument Company, Rochester, N. Y., booth 85, pyrometers.

Tate-Jones Co., Pittsburgh, Pa., booths 103-104, oil and gas furnaces.

Vanadium-Alloys Steel Company, Latrobe, Pa., booths 96-97-98, tool steel.

Whitman & Barnes Co., Chicago, twist drills.

Whitman & Barnes Co., Chicago, booth 27, twist drills.

The lectures and exhibits are to be supplemented by motion pictures on several evenings, illustrating new phases of the industry. Tuesday evening, Sept. 23, there will be motion pictures of coal and coke, with the following features:

1. Story of coal (4 reels), accompanied by discussion by M. F. Leopold, of the U. S. Bureau of Mines.

2. The manufacture of Beehive coke (1 reel).

3. By-Product Coking with Koppers Ovens. (3 reels.)

Thursday evening, Sept. 25, James

(*Continued on page 16 of Advertising Section.*)

To the Alert Gas Man

the advertising pages are as interesting as the text pages. He realizes that a knowledge of the tools of his trade is as important as the theories that underlie it and the practices upon which it is founded. That is why he carefully scans each new advertisement and often re-reads each veteran. Do you?

WHY NOT BUY ON A
QUALITY
BASIS

Any and every condition of tax and load on your purifying capacity has been adequately provided for in the various grades of Iron Hydroxide.

IRON HYDROXIDE now used in 291 gas works
QUALITY EXPLAINS WHY
IRON HYDROXIDE COMPANY
PASCHALL STATION, PHILADELPHIA, PA.

YOU—use steel
CONDENSERS
PURIFIERS
TANKS

WE—build them.

Why not Electrically Welded Steel Pipe and Fittings for your Gas Mains. It costs LESS than Cast Iron.

STEERE ENGINEERING COMPANY
Gas Engineers and Builders
DETROIT - - MICHIGAN

AN IMPROVEMENT
IN ANY GAS PLANT

THE
Congdon Scrubber Standpipe System

Eliminates All Standpipe Trouble
Relieves Condensing and Scrubbing Apparatus
Can Be Installed on Old Benches as Well as New

Designed and Erected by

The Parker-Russell Mining and Mfg. Co.

Builders of Complete Coal Carbonizing Plants

Laclede Gas Building **St. Louis, Mo.**

Gas Heating Feature of Steel Treaters' Exhibit

(*Continued from page 216.*)

Handy, vice president of the Bray Studios, will make addresses during the showing of the following films:

1. Formation of coal made visible.
2. Chemistry of gas engines made visable.

On some evening not yet decided, a picture of the operation of the Koppers' By-Product plant will be shown.

The fact that the Steel Treaters' convention will be held in connection with the exposition of the Chemical Industries, makes it an even more important event in the development of the industry. General headquarters are to be at the Seventh Regiment Armory, and association headquarters at the Hotel Morrison.

Company Erecting Storage Plant for Emergency

Officials of the Central Counties Gas Company of Visalia, Cal., have received bids for the construction of a storage plant near the north city limits of Powersville, Cal. The plant will have a capacity sufficient to handle local service for twenty-four hours in event of an accident to the central plant or the transmission lines from Visalia.

Standard Company of New Jersey Petitions Increase

A petition has been filed by the Standard Gas Company of Atlantic Highland, N. J., with the Public Utilities Commission for permission to increase its rates September 25, has been fixed for the hearing, which will be held in Newark, N. J., when the municipalities interested will be given an opportunity to be heard in opposition or approval of the petition.

The company supplies the New Jersey cities of Atlantic Highlands, Highlands, Middletown Township, Keansburg, Raritan Township, Keyport, Matawan, Matawan Township and Rumson with gas. At present the charge for the first 5,000 ft. is $1.45, with 90 cents as the minimum for 100,000 ft. with a discount of 5 cents per 1,000 for prompt payment. There is also a monthly meter charge. The company asks for an increase to $1.85 for the first 5,000 ft. with a minimum charge of $1.30 for 100,000 ft.

35-Cent Raise Petitioned by Natural Gas Company to Cover New Well Expenditures

The Pavilion Natural Gas Company, operating in counties of Genesee, Wyoming, Livingston and Monroe and other counties in New York State, has asked the Public Service Commission, second district, for permission to charge domestic consumers for natural gas 75 cents per 1,000 cu. ft. The Commission will give a hearing after notice is served upon all municipalities affected by the new gas rate.

The company supplies natural gas in the towns of Le Roy, Perry, Warsaw, Mt. Morris, Moscow, Avon, Covington, York, Bethany, Leicester, Castile and the Silver Lake Assembly, N. Y. It also supplies gas to the Tri-County Natural Gas Company operating in Monroe and Livingston Counties, N. Y.

The company says its present rates of 35 and 40 cents per 1,000 cu. ft. are insufficient to pay operating expenses and a reasonable return on the investment. It says the natural gas supply is failing and its revenue is steadily decreasing and that large sums have been expended and will be required in seeking new gas wells.

Extensions to System in Picher, Okla.

Extensions are being made by the Consumers Gas Company, operating in Picher, Okla., that will make possible the installation of natural gas in about 100 more homes, according to W. E. Carden, manager of the company's commercial department. A force of workmen have begun ditching preparatory to tapping the high pressure mains to extend the service. Unlike many cities, Picher, Okla., has always had a strong gas pressure that gave good service in the winter months.

Entire New Plant Replacing Old One

The entire plant of the New Bern Gas Company, of New Bern, N. C., has been completely torn down, and the company has begun the work of installing complete new machinery for the making of gas. In quick succession will follow the installation of new pumps, new blowers, and entire new equipment. The new plant will have a capacity sufficient to take care of a city population of 25,000.

Houston, Tex., Company Granted Petition

Hundred-foot extensions and a rate of $1.09, with an additional charge of 10 cents on all bills not paid within ten days after presentation, are the regulations finally agreed upon by the Houston city council. Clarence Wharton, attorney for the Houston Gas & Fuel Company, appeared before the council to ask that extensions be cut to 15 ft. Heretofore the company has been required to extend 150 ft. The 75 ft. extensions, however, would create a situation whereby the company would not have to cross streets to customers, and the commissioners did not favor such a cut. They compromised at 100 ft. with a plan whereby persons living more than 100 ft. could pay for their extensions, and when the main were extended beyond them their money would be refunded.

The twenty-year system for returning money paid on extensions of more than 100 ft. was abolished.

Ludington Also Would Appreciate an Increase

Increase in the gas rate from $1.35 to $1.60 is the request made to the Board of City Commissioners of Ludington, Mich., by President C. N. Remington on behalf of the Ludington Gas Company. He was asked to put his proposition in writing and it will be given further consideration Sept. 2.

Mr. Remington submitted two propositions: First, for the commission to join with him in asking the Michigan Public Utilities Commission to fix an equitable rate; second, to submit an ordinance naming a rate of $1.60, subject to 5 per cent discount for prompt payment, to the voters of Ludington.

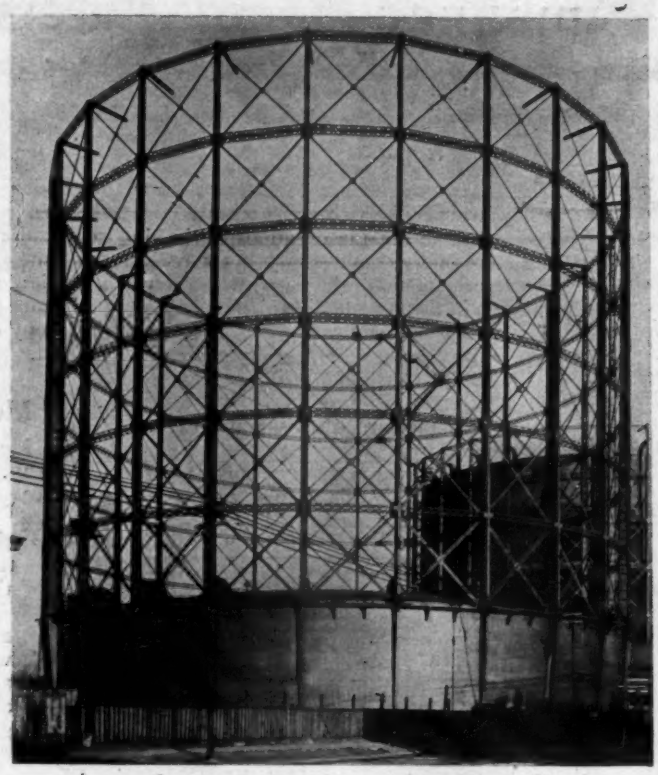
P. G. & E. Will Run Service Line into Camping Grounds

On an attractive camping site set aside for automobile tourists in the city of Atascadero, Cal., there is an added advantage of a gas supply provided so that the campers can cook meals. The Pacific Gas & Electric Company plans running a gas service line also to Santa Rosa, Cal., into the camping grounds, and providing gas plates and meters whereby campers may simply drop a coin in the meter and get the gas for cooking at once.

RITER-CONLEY CO.

PITTSBURGH, PA.

PURIFYING BOXES



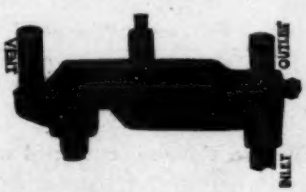
STEEL TANKS

BUILDERS OF

TWENTY YEARS EXPERIENCE **GAS HOLDERS** HAS TAUGHT US HOW

STEEL CONSTRUCTION OF ALL KINDS

HIGH PRESSURE



COMBINATION STYLE
(With Mercury Seal)

Pacific Coast Representative
C. B. BABCOCK CO.
No. 568 Mission Street
San Francisco

REYNOLD'S

ARTIFICIAL GAS GOVERNORS
AND
NATURAL GAS REGULATORS
For All Kinds of Pressure Reduction

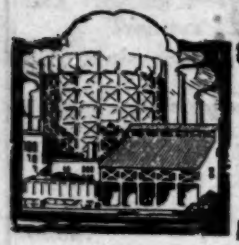
WRITE FOR CATALOG

REYNOLD'S GAS REGULATOR CO.

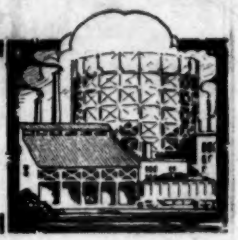
SERVICE GOVERNORS

"OLD STYLE"
(Without Seal)

Main Office and Works
ANDERSON, INDIANA



With The Equipment & Appliance Manufacturers



Conducted by Business Department of American Gas Engineering Journal

Automatic Gas System in Textile Industry

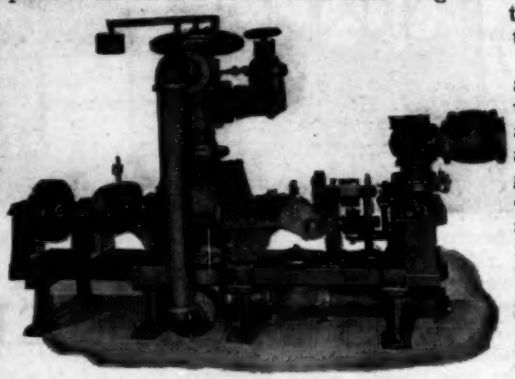
The Kemp Manufacturing Co., Baltimore, Md., make the Kemp Automatic Gas System, which is an improved method of utilizing municipal gas whether manufactured or natural, for factory fuel purposes, and for all mechanical processes and operations in which uniformity of pressure, temperature control, safety, and economy of application of fuel are factors.

Their catalog shows a number of illustrations of installations and gives information regarding a number of varied industries where this apparatus can be used successfully.

The chapter devoted to the textile industry is of special interest to gas companies who have such plants in the territory they serve. They state that:

"The common method of burning gas in a cloth singeing machine is to apply it through a slotted burner, the gas and air being conducted to the burner, the gas and air being conducted to the burner by separate pipes. Each pipe provided with a stop-cock or valve, by the manipulation of which the operator effects the mixture of air and gas and endeavors to obtain the color or character of flame desired. No matter how skilled the operator, it is impossible for him to get the same mixture on all of the burners on a singer, and also difficult to maintain the same mixture or flame on any one burner for a considerable time, as slight change of pressure of either the air or gas alter the mixture as much as 15 per cent to 25 per cent. Usually a change of 25 per cent is perceptible, but frequently it cannot be detected by the eye. The burners which are commonly used are not suited to burn such mixtures of air and gas as are most efficient and especially suited for burning the nap from the cloth. The most efficient mixture for this work will not stay ignited in a slotted burner unless turned so low as to be almost useless. With the average installation of cloth singeing machines the gas and air mixture is so rich as to require considerable outside or atmospheric air to support combustion. As a result the flame chars the nap, and as oxygen in the surrounding air is required to support combustion of the carbon in the gas, there is little oxygen available for consumption of the charred nap.

The mixture of gas and air furnished by the (single pipe) Kemp system produces a flame which is self-sustaining. This thin mixture by means of our patented burner is applied to the surface of the cloth with



KEMP AUTOMATIC GAS SYSTEM

little blast making a soft flame, rapidly and uniformly consuming the nap, without penetrating or injuring the fabric. When desired it can be pushed through the burner under heavy pressure, impinging against the cloth with considerable force, singeing uniformly and rapidly. Some of the advantages of this method of application of the gas are the facility and ease with which temperature is controlled. It is possible to increase the speed of the singer, getting greatly increased output at considerable reduction in gas consumption, and a more uniformly finished product.

There has always been much difficulty to burn gas in calender rolls, the flame usually depositing soot, which forms an insulation on the inside of roll, as well as tending to soil the goods. The Kemp System burns the gas without soot, with perfect combustion, heating the calender in less time and with half the fuel consumption, and is frequently cheaper and more efficient than steam.

A copy of catalog will be sent on request.

Meek Reel Oven

The Meek Oven Manufacturing Company, New York City, N. Y., have recently issued a twenty-page catalogue describing and illustrating the Meek reel oven manufactured and patented by them.

This oven is lined with a special fire-clay tile which retains the heat and radiates it evenly on all sides of the baked goods. The walls consist of two layers of 26-gauge sheet steel between which is a 3-in. layer of mineral wool. This wool acts as an insulator to prevent the heat from radiating out.

The reel of the oven is fitted with eight shelves and revolves once every minute. This constant motion of the reel distributes the heat evenly and provides a uniform application of heat to the baking. The shelves are of open construction and the shelf-hangers are so constructed that they may be hooked on the reel or taken off very easily.

The Meek oven is equipped with a special pyrometer registering to 800 deg. Fahr. By means of gas cocks and damper the heat can be easily regulated and kept at desired temperature.

The manufacturers will send a copy of this catalogue on request.